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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/686,818      | 10/16/2003  | Ho-Soon Lee          | 5000-1-366          | 8489             |

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EXAMINER

HUGHES, JAMES P

ART UNIT PAPER NUMBER

2883

DATE MAILED: 05/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/686,818

Applicant(s)

LEE, HO-SOON

Examiner

James P. Hughes

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 2 and 13 are objected to because of the following informalities. In the phrase “the optical fiber cable has a diameter *substantially* less than 3.0 mm” (emphasis added), the limitation of “substantially” is unclear. How much below 3.0 mm is the diameter? Appropriate correction is required.
2. Claims 4 and 14 are objected to because of the following informalities. The claims recite the limitation of “the fiber cable [having] a weight substantially less than 10 kg/km”. It is unclear as to what degree below 10 kg/km constitutes substantially less.
3. Claim 10 is objected to because of the following informalities. The claim recites the limitation of “frame-retardant material”, which is unclear. Perhaps applicant intended – flame – retardant material. If applicant did intend to recite a “flame-retardant material”, it is unclear to what degree of retarding (or repelling) a flame, the recitation is directed. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonicel et al. (6,035,087) in view of Hutton et al. (6,421,487). Bonicel et al. (6,035,087),

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herein referred to as “Bonigel”, teaches an optical fiber cable comprising: a ribbon fiber bundle formed by stacking a plurality of ribbon optical fibers (e.g. 9, 11), each comprising a plurality of optical fibers (e.g. 2b) arranged in parallel surrounded by a PVC jacket. It is also taught that the array of ribbons may be surrounded by a jacket (or binder or tape) to keep the ribbons tightly held. The array of ribbons is subsequently surrounded by an outer PVC sheath (e.g. tube 3b). When arranged, valleys form between the end curves of each ribbon (9, 11). (See e.g. Col. 3, ll. 45 – Col. 4, ll. 40)

Following, Bonigel teaches that fiber reinforcing tension members (e.g. FRP materials) may provide structural support as is well known in the art.

Regarding claims 3 and 13; Bonigel teaches that the optical fiber cable may have a diameter in the range of 1.2 – 2.0 (mm). (see e.g. Col. 4, ll. 20-25)

Bonigel does not explicitly teach what materials the jacket (or binder or tape) may be made from. However, Bonigel does teach that various materials may be used in optical fiber protection such as PVC and elastomers. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ PVC in the jacket (or binder or tape) because it would allow you to efficiently couple the ribbon fibers.

Regarding claims 4 and 14; Bonigel does not explicitly teach the mass of the optical fiber. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to construct the device of Bonigel with a mass substantially less than 10 kg/km because this would allow easier transport and operation of the fiber.

Regarding claim 10; Bonicle does not explicitly teach that the outer sheath is formed from a flame resistant material. It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a flame resistant material because it will further protect the optical fibers (e.g. 2b). (See e.g., Col. 2, ll. 45 – Col. 4, 45)

Additionally, Bonicle does not explicitly teach how the FRP tension members are arranged in the ribbon fiber with respect to the fibers (9,11).

Hutton et al. (6,421,478) teaches an optical fiber cable comprising an array of ribbon fibers (e.g. 44) surrounded by a protective material (e.g. 30) with plurality parallel tension members (e.g. 32) extending in the longitudinal direction arranged in valleys formed between the end curves of each ribbon fiber. (See e.g. Col. 6, ll. 35-65)

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the tension member placement of the Hutton invention in the invention of Bonicle because this will reduce the cross sectional area of the fiber.

### *Conclusion*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee (6,885,799), Nothofer et al. (5,878,180), Um et al. (2003/0202757, 6,751,383), Rhoney et al. (2004/0190842, 2004/0240808), Hurley (6,185,353), Paborn et al. (6,002,824), Debban, Jr. et al. (6,778,745) Rahman

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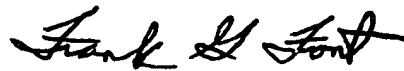
(5,229,851), La Noane et al. (5,155,789) all teach similar fiber optic ribbon cable inventions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James P. Hughes whose telephone number is 571-272-2474. The examiner can normally be reached on Monday - Friday 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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